



# Port of Seattle

Lower Duwamish Waterway Superfund Site  
Terminal 117 Upland Area

## WORK PLAN FOR UPLAND AREA INVESTIGATION FINAL

For submittal to:

**US Environmental Protection Agency, Region 10**  
1200 Sixth Avenue  
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## Acronyms

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<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CLP</b>	Contract Laboratory Program
<b>DQO</b>	data quality objective
<b>Ecology</b>	Washington State Department of Ecology
<b>EAA</b>	Early Action Area
<b>EE/CA</b>	engineering evaluation/cost analysis
<b>EPA</b>	US Environmental Protection Agency
<b>HSP</b>	health and safety plan
<b>LDW</b>	Lower Duwamish Waterway
<b>LDWG</b>	Lower Duwamish Waterway Group
<b>NTCRA</b>	non-time-critical remedial action
<b>PAH</b>	polycyclic aromatic hydrocarbon
<b>PCB</b>	polychlorinated biphenyl
<b>Port</b>	Port of Seattle
<b>QA</b>	quality assurance
<b>QA/QC</b>	quality assurance/quality control
<b>QAPP</b>	quality assurance project plan
<b>RI/FS</b>	remedial investigation/feasibility study
<b>SOW</b>	statement of work
<b>T-117</b>	Port of Seattle Terminal 117 (Malarkey)
<b>TPH</b>	total petroleum hydrocarbons
<b>USACE</b>	US Army Corps of Engineers
<b>Windward</b>	Windward Environmental LLC

## 1.0 Introduction

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The purpose of this work plan is to describe the technical work to be conducted for the Terminal 117 (T-117) Upland Area Investigation necessary to support the anticipated upland removal action. The Upland Area investigation will be performed under US Environmental Protection Agency (EPA) Administrative Settlement Agreement and Order on Consent No. CERCLA 10-2006-0072 (EPA 2005), hereafter referred to as the Settlement Agreement. The primary purpose of this investigation is to characterize the extent of soil contamination in the upland portion of the terminal, including the shoreline bank area above elevation +14 mean lower low water to:

- ◆ Enable the Port of Seattle (Port) to design an Upland Area removal action that will be protective of human health and the environment
- ◆ Design and implement engineering, maintenance, and institutional control measures for long-term site management
- ◆ Generate sufficient information about the extent of Upland Area contamination to effectively reduce any potential for recontamination of the lower bank, mudflat, and sediments. Both the lateral and vertical extent of chemical contaminants of concern that affect soil will be evaluated.

Investigation results will be used to supplement existing data previously collected to develop the engineering evaluation/cost analysis (EE/CA) for the T-117 Early Action Area (EAA) (Windward et al. 2005). The methods and design of the investigation and subsequent upland removal action will be coordinated with the proposed T-117 EAA non-time-critical remedial action (NTCRA) for the bank and sediment (to be addressed under a separate EPA settlement agreement).

Appendix A of the Settlement Agreement includes a statement of work (SOW) for the investigation of the Upland Area that prescribes the four tasks listed below:

- ◆ Task 1 – Work Plan
- ◆ Task 2 – Quality Assurance Project Plan (QAPP)
- ◆ Task 3 – Data Report and Technical Memorandum
- ◆ Task 4 – Community Involvement Activities

Work at the T-117 Upland Area will be performed by the Port in accordance with the Settlement Agreement between the Port and EPA. Anita Lovely is the designated project manager for the Port for all work at the T-117 Upland Area. The Port has retained a team of consultants (Windward Environmental LLC; Dalton, Olmsted and Fuglevand, Inc.; and Onsite Enterprises, Inc.) to assist in accomplishing the technical tasks required by EPA. The Retec Group, Inc. will provide review of the field sampling

design and will design the anticipated upland removal action under a subsequent SOW.

## **1.1 BACKGROUND**

T-117 is located at 8700 Dallas Avenue S in Seattle, Washington (Figure 1-1). T-117 covers approximately 5.5 acres, including a 50-ft-wide section of land adjacent to the shoreline, which is owned by the Port as successor in interest to the King County Commercial Waterway District No. 1. In 1999, the Port acquired the inland parcel between the shoreline parcel and Dallas Avenue S, that was previously owned by the Malarkey Asphalt Company. These properties were consolidated to form the present-day T-117. Adjacent properties include the Basin Oil Company on the west side of Dallas Avenue S, The Boeing Company (Boeing) to the south, and the South Park Marina to the north-northwest.

A detailed summary of the site history and previous investigations is included in the summary of existing information and data needs analysis report (Windward et al. 2003). Elevated concentrations of polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and other constituents in Upland Area soils were noted in early investigations beginning in the 1980s. These observations were generally limited to the parcel adjacent to the shoreline and the former asphalt plant process area. The facility was dismantled by the owner in the late 1990s, and soil contaminated with PCBs in the shoreline parcel area was removed in an EPA Superfund cleanup action between October 1999 and February 2000 (Onsite 2000).

In 2005, elevated concentrations of PCBs were also detected in upland boreholes installed as part of the ongoing design for the T-117 EAA (to be addressed under a separate EPA settlement agreement). The work was being performed under an existing Administrative Order on Consent (Cohen 2003) signed by the City of Seattle, King County, the Port, and Boeing, working together in the Lower Duwamish Waterway (LDW) as the Lower Duwamish Waterway Group (LDWG). Based on the borehole results, EPA and the Port have agreed that a broader investigation of the entire T-117 property is warranted to address and control these contaminants and ensure the potential for human and/or ecological exposure and sediment recontamination is minimized.

Data generated as a result of the implementation of this work plan could affect the proposed T-117 EAA removal design in the following ways:

- ◆ Additional data could influence the upland extent of the proposed bank and sediment removal that is occurring as a NTCRA under a separate EPA settlement agreement.
- ◆ Additional data could influence the way in which the construction phase of the NTCRA (i.e., bank removal and replacement) is managed and scheduled to prevent the recontamination of adjacent sediments.

- ◆ Additional data could serve as the basis for recommendations by the Port for any future or additional Upland Area removal actions consistent with the T-117 Source Control Action Plan (Ecology 2005) and the Source Control Strategy (Ecology 2004) for the LDW.
- ◆ Additional data characterization will inform future actions by enabling the Port to establish institutional controls to effectively manage any future surface and subsurface excavation, thereby preventing recontamination of the bank and sediments.

As a result, the modified scope of the ongoing T-117 EAA design area will be addressed under a separate EPA settlement agreement.

## **1.2 PROJECT OBJECTIVES**

The overall objective of the Upland Area investigation is to address data gaps regarding contaminants in surface and subsurface soil at T-117 and obtain the field observations, samples, and laboratory analyses necessary to support the preparation of an upland removal action plan and associated design-related materials (under a subsequent SOW). Specific Upland Area investigation-related objectives include:

- ◆ Further delineate the extent of known PCB contamination already identified during previous investigations as part of the EE/CA (Windward et al. 2005).
- ◆ Evaluate the concentrations and extent of PAHs, total petroleum hydrocarbons (TPH), and select metals in soil.
- ◆ Check for the presence of other potential soil contaminants historically observed at the site to determine if they are additional Upland Area constituents of concern.
- ◆ Obtain geotechnical information (i.e., blow counts during coring) to support the design for the upland and upper bank soil removal.
- ◆ Obtain observations regarding the location and thickness of concrete slabs and pavements, asphalt pavements, and other structures that could impact the design of the anticipated upland removal action.

An additional project objective includes providing information to support EPA's community involvement activities (see Section 2.3, Task 4 – Community Involvement).

## **1.3 DOCUMENT ORGANIZATION**

The remainder of this document is divided into three sections: Section 2.0 discusses the tasks to be conducted for the investigation portion of the T-117 Upland Area; Section 3.0 provides a schedule for these tasks; and Section 4.0 includes references cited in the work plan.

## 2.0 T-117 Upland Area Investigation Tasks

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As discussed in Section 1.0, the SOW for the T-117 Upland Area investigation (EPA 2005) defines four tasks. This work plan (Task 1) describes the approach for the remaining three technical tasks that EPA has directed the Port to perform:

- ◆ Task 2 – QAPP
- ◆ Task 3 – Data report and technical memorandum
- ◆ Task 4 – Community Involvement

Monthly progress reports will also be submitted to EPA beginning 30 days from the execution of the Settlement Agreement.

### 2.1 TASK 2 – QUALITY ASSURANCE PROJECT PLAN

The Port's plan for conducting all field activities will be detailed in a QAPP to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that data meet all data quality objectives (DQOs). QAPP elements are listed in Table 2-1. The Port will submit a health and safety plan (HSP) that is designed to protect onsite personnel from physical, chemical, and all other potential field sampling hazards and will comply with EPA's *Standard Operating Safety Guide* (EPA 1992). The HSP will be prepared as an appendix to the QAPP.

The QAPP will define in detail the sampling and data-gathering methods that will be used on the project. In addition, it will include sampling objectives, a sampling schedule, and a detailed description of sampling activities, locations, equipment and procedures, sample handling protocols (e.g., sample containers and labels, sample preservation methods), and analyses to be conducted. As appropriate, the QAPP will ensure that sample collection and analytical activities are conducted in accordance with the technically acceptable protocols. The QAPP will also describe the quality assurance and quality control (QA/QC) protocols necessary to achieve the required data quality objectives. The QAPP will be prepared in accordance with EPA guidance and requirements (2001a; 2002). The QAPP will also address personnel qualifications and procedures for sample custody and analysis and data reduction, validation, and reporting.

The problem definition and sampling process design elements of the QAPP will include a presentation and summary of existing upland soil contaminant data together with an identification and discussion of data gaps. Existing data will be referenced as to the source study and quality (i.e., collected as part of an independent action vs. Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA], or Superfund oversight). Figures that show existing sample locations and locations proposed for additional investigation and sampling will be included. A detailed listing of proposed analytes will be included and will be discussed in terms of existing site information, operational history, and the SOW objectives. The QAPP will



also provide criteria for determining whether additional analysis may be needed based on the appearance of odor, sheen, and discoloration in soil borings.

**Table 2-1. QAPP Elements**

<b>Group A: Project Management Elements</b>	
A1	Title and approval sheet
A2	Table of contents
A3	Distribution list
A4	Project/task organization
A5	Problem definition/background
A6	Project/task description
A7	Quality objectives and criteria
A8	Special training/certification
A9	Documents and records
<b>Group B: Data Generation and Acquisition Elements</b>	
B1	Sampling process design (experimental design)
B2	Sampling methods
B3	Sample handling and custody
B4	Analytical methods
B5	Quality control
B6	Instrument/equipment testing, inspection, and maintenance
B7	Instrument/equipment calibration
B8	Inspection/acceptance of supplies and consumables
B9	Non-direct measurements
B10	Data management
<b>Group C: Assessment and Oversight Elements</b>	
C1	Assessments and response actions
C2	Reports to management
<b>Group D: Data Validation and Usability Elements</b>	
D1	Data review, verification, and validation
D2	Verification and validation methods
D3	Reconciliation with user requirements

The laboratory performing the analytical work must have and follow an approved QA program that complies with *EPA Requirements for Quality Management Plans* (EPA 2001b) or equivalent documentation as determined by EPA. If a laboratory that is not in the EPA Contract Laboratory Program (CLP) is selected, the QAPP will be consistent with the requirements of the CLP. The Port will provide assurances that EPA has access to laboratory personnel, equipment, and records for sample collection, transportation, and analysis.



All sampling and analyses performed pursuant the Settlement Agreement must conform to EPA guidance and receive EPA's approval regarding sampling, QA/QC, data validation, and chain-of-custody procedures. Upon request by EPA, the Port will have the laboratory analyze samples submitted by EPA for QA monitoring. The Port agrees that EPA personnel may audit any laboratory that performs analytical work under the Settlement Agreement. Prior to awarding any work to an analytical laboratory, the Port will inform the laboratory that an audit could be performed and that the laboratory must agree to coordinate with EPA prior to performing analyses.

The QAPP will include a complete list of all previous applicable studies and sampling efforts that were conducted independently or under state, local, or other federal authorities or agreements and could be relevant to the response selection under the Settlement Agreement. Upon request by EPA, the Port will submit copies of documents to EPA. As described previously, the QAPP will contain detailed figures that will show all of the previous data collected and summarized for the site, including specific locations of previous cleanups.

## **2.2 TASK 3 – FIELD SAMPLING, DATA REPORT, AND TECHNICAL MEMORANDUM**

Upon EPA approval of the QAPP, the Port will conduct the field sampling defined as part of Task 2. The Port will notify EPA and the Washington State Department of Ecology (Ecology) prior to commencing any field work so that the agencies can provide the necessary staff oversight. After receipt of the data from the laboratory, a data report that includes all information regarding the field sampling event, including validated analytical results, will be prepared. Since the data collected under this investigation will be used to support source control efforts and recognizing that Ecology is the lead on source control, the Port understands that EPA will coordinate approval of all deliverables submitted under this investigation with the state.

The data report will include, at a minimum, the following:

- ◆ Introduction and purpose
- ◆ A summary of the field sampling effort, including information on sampling equipment, dates of field effort(s), field sampling observations, sampling locations (latitudes, longitudes, and state plane coordinates), and figures (station locations will be provided electronically with data)
- ◆ Deviations from the QAPP
- ◆ Summary of sample handling and shipping
- ◆ Summary of all data, including a data validation report

The Port will submit a data validation report to EPA within 15 working days of receipt of a complete laboratory raw data package. Information necessary for EPA to perform an independent review of the validated data will also be provided.

The subsequent technical memorandum will include results of the sampling investigation and, at minimum, recommendations for:

- ◆ Management of Upland Area soils based on lessons learned from the existing response actions in place at T-117 (e.g., containment, removal)
- ◆ Upland Area removal action(s) and cleanup levels
- ◆ Institutional controls
- ◆ Modifications to the inshore boundary of the NTCRA bank and sediment removal area

### **2.3 TASK 4 – COMMUNITY INVOLVEMENT**

As requested by EPA, the Port will provide information to support EPA's community involvement activities related to the work performed pursuant to the Settlement Agreement and will participate in informal public meetings that may be held or sponsored by EPA to explain ongoing activities performed under the Settlement Agreement. Upon request by EPA, the Port will submit copies of plans, technical memoranda, validated data, and other reports, except those documents that are privileged, to EPA. The Port will send electronic draft and final deliverables of Tasks 2 and 3 to key EPA staff and external stakeholders at the same time that these deliverables are sent to the EPA project manager for T-117, Ravi Sanga. Key staff and external stakeholders include: Kris Flint, EPA; Kym Takasaki, US Army Corps of Engineers (USACE); and Dan Cargill, Ecology. As part of these deliverables, the Port will provide the specified number of bound copies of final reports to EPA, Ecology, and USACE as required in Section XXXI of the Settlement Agreement.

### 3.0 Schedule

Table 3-1 and Figure 3-1 provide a schedule for each of the deliverables discussed in Section 2.0.

**Table 3-1. Deliverable schedule for T-117 Upland Area investigation tasks**

DELIVERABLE NAME	EPA DUE DATE <sup>a</sup>
<b>Task 1 – Work Plan</b>	
Draft work plan	5 working days from the effective date of Settlement Agreement No. CERCLA 10-2006-0072 (October 24, 2005)
Final work plan	7 working days from receipt of EPA comments on draft work plan (November 16, 2005 )
<b>Task 2 – QAPP</b>	
Draft QAPP	10 working days from submittal of final work plan (December 2, 2005)
Final QAPP	10 working days from receipt of EPA comments on draft QAPP (January 10, 2006)
<b>Task 3 – Field sampling, data report, and technical memorandum</b>	
Field sampling	10 working days from approval of QAPP
Data validation report	15 working days from receipt of raw data from laboratory
Draft data report and technical memorandum	30 working days from receipt of raw data from laboratory
Final data report and technical memorandum	14 days from receipt of EPA comments on draft data report and technical memorandum
<b>Task 4 – Community Involvement</b>	
Optional	TBD
<b>Monthly Progress reports</b>	November 16, 2005 December 16, 2005 January 16, 2006 February 15, 2006 March 17, 2006 April 17, 2006

<sup>a</sup> Due date is defined by number of working days from various milestones. Calendar dates are given for informational purposes only and are based on assumed approval dates. Schedule assumes an EPA review time of 10 working days for the draft work plan and 15 working days on all other draft deliverables and a laboratory turn-around time of 5 working days from last field sampling day to result submittal. Task 3 deliverable dates to be determined based on completion of field work and EPA approval.

## 4.0 References

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- Cohen L. 2003. Personal communication (letter dated May 2 to Nancy Glaser, Wayne Grotheer, Steve Tochko, and Don Theiler regarding Malarkey Early Action Area). Manager, Cleanup Unit No. 3, Office of Environmental Cleanup, US Environmental Protection Agency Region 10, Seattle, WA.
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## Figures

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**Figure 1-1. T-117 site location**

### Figure 3-1. Schedule for T-117 Upland Area Investigation